NAME: DATE:

Mastery Assessment of Unit 2 (Practice version 102)

Question 1

Let f represent a function. If $f[29] = 28$, then there exists a knowable solution to the equation below.

$$y = \frac{f[16x - 35]}{7} + 21$$

Find the solution.

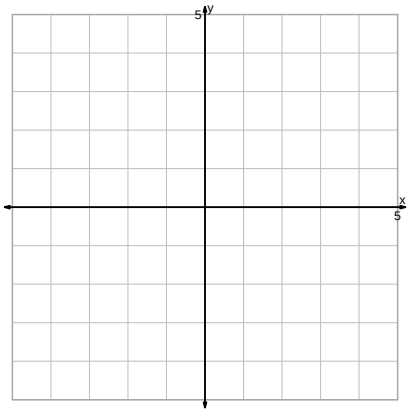
$x =$

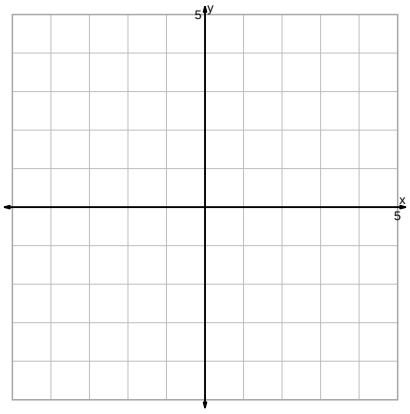
$y =$

Question 2

Graph the equations accurately. For each integer-integer point on the parent, indicate the corresponding point precisely. Also, with dashed lines, indicate any asymptotes.

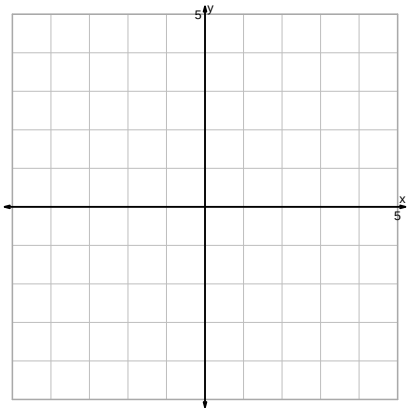
$y = \sqrt{x} + 2$

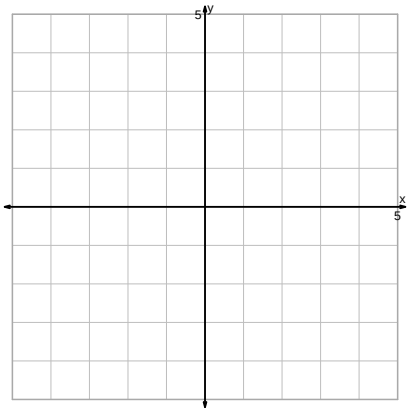




$y = (x + 2)^3$

$y = \frac{\sqrt[3]{x}}{2}$

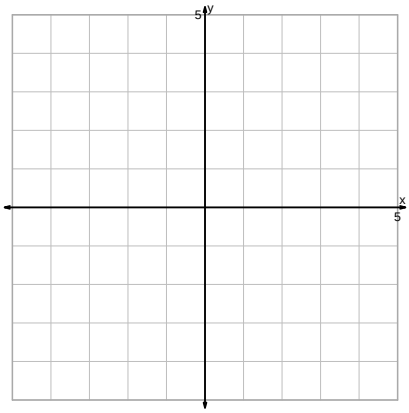


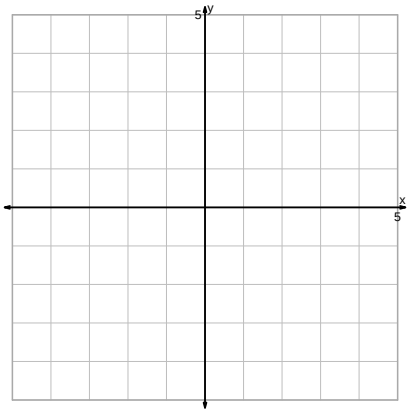


$y = \log_2(x - 2)$

Question 2 continued...

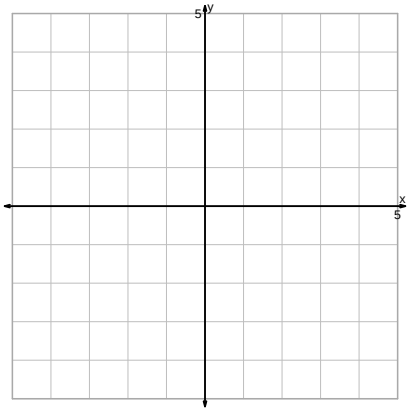
$y = x^3 - 2$

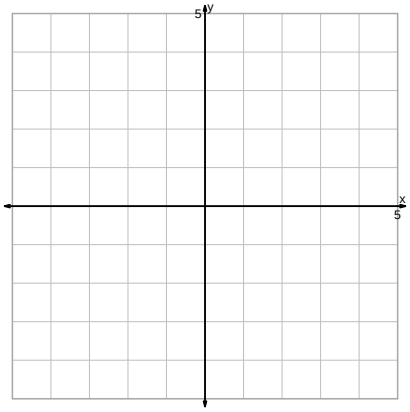




$y = \sqrt{-x}$

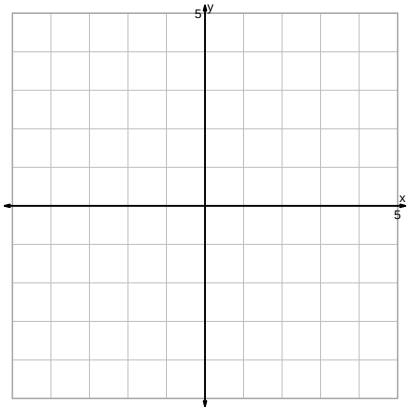
$y = 2 \cdot x^2$

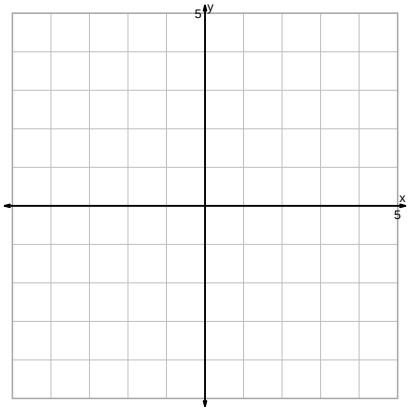




$y = \left(\frac{x}{2}\right)^2$

$y = -2^x$

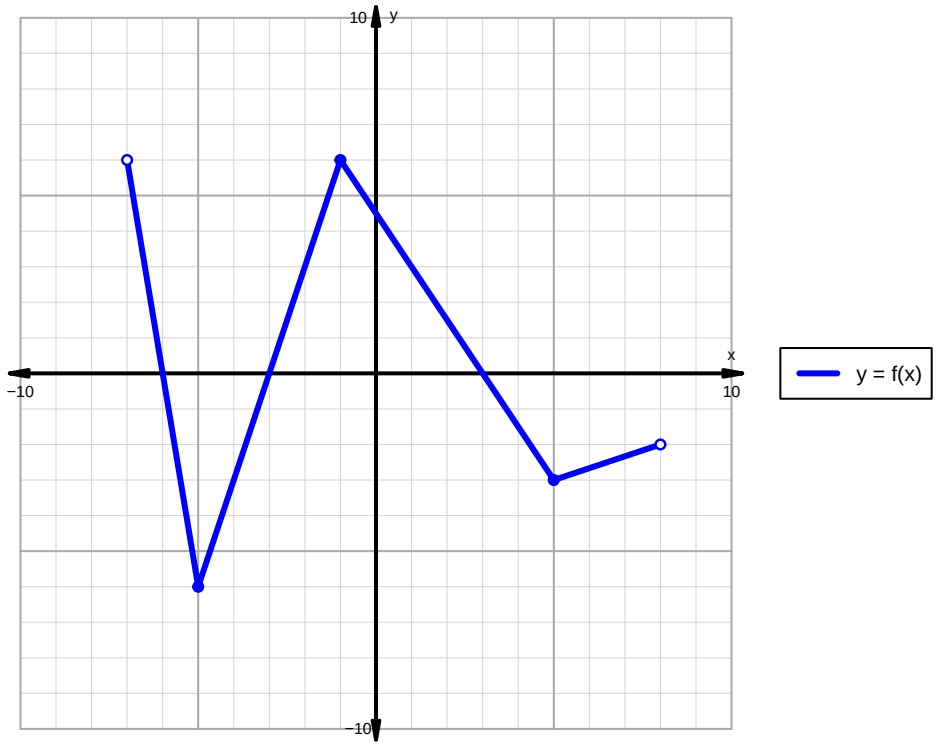




$y = \sqrt[3]{2x}$

Question 3

A function is graphed below.



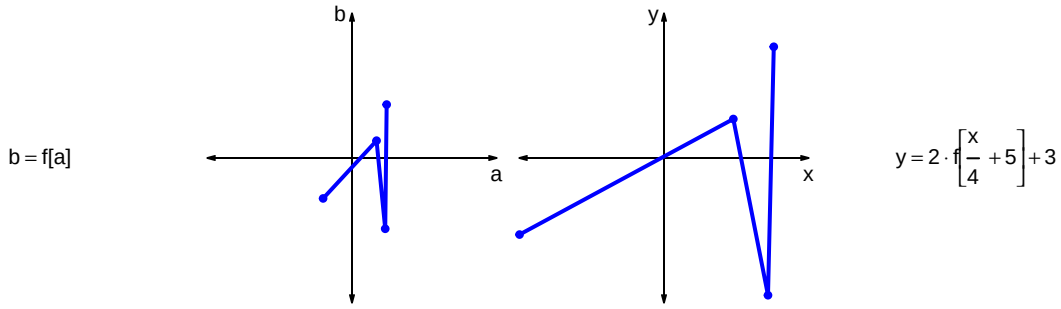
Indicate the following intervals using interval notation.

Feature	Where
Positive	
Negative	
Increasing	
Decreasing	
Domain	
Range	

Question 4

Let f represent a function. The curves $b = f[a]$ and $y = 2 \cdot f\left[\frac{x}{4} + 5\right] + 3$ are represented below in a table and on graphs.

a	b	x	y
-20	-28	-100	-53
17	12	48	27
23	-49	72	-95
24	37	76	77



a. Write formulas for calculating x from a and calculating y from b. (Or, write the coordinate transformation formula.)

b. What geometric transformations (using words like translation, stretch, and shrink), and in what order, would transform the first curve $y = f[x]$ into the second curve $y = 2 \cdot f\left[\frac{x}{4} + 5\right] + 3$?

Question 5

A parent square-root function is transformed in the following ways:

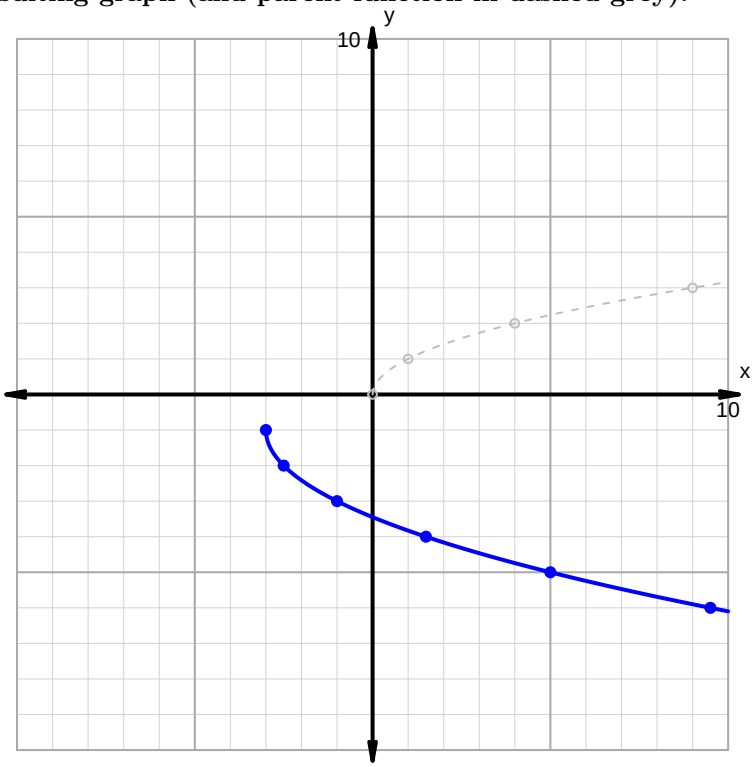
Horizontal transformations

1. Horizontal shrink by factor 2.
2. Translate left by distance 3.

Vertical transformations

1. Translate up by distance 1.
2. Vertical reflection over x axis.

Resulting graph (and parent function in dashed grey):

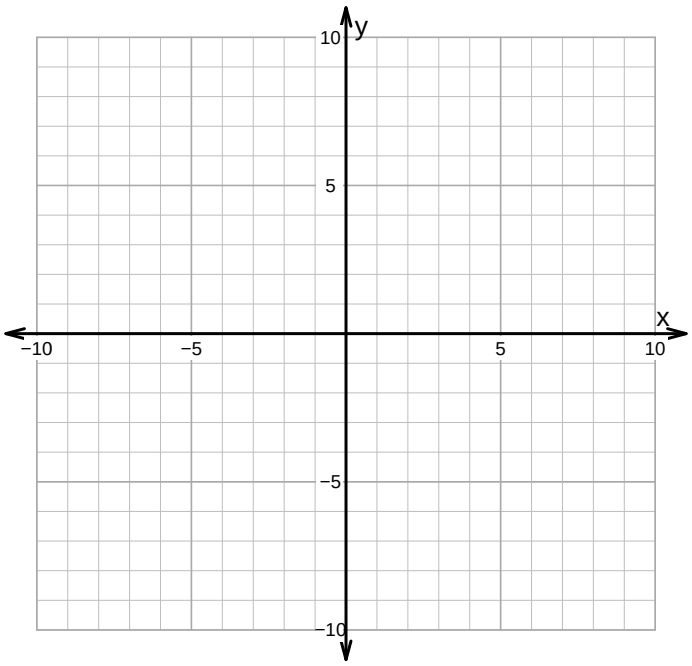


- What is the equation for the curve shown above?

Question 6

Make an accurate graph, and describe locations of features.

$$y \;=\; -3 \cdot |x - 2| + 3$$



Feature	Where
Domain	
Range	
Positive	
Negative	
Increasing	
Decreasing	